



### VT5366 wireless reference design mouse

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#### Introduction

This user manual, along with the VT5366 datasheet will enable you to evaluate the 27MHz VT5366 Reference Design mouse and assist you in the design of your own VT5366 wireless mouse. If you have any questions, support can be obtained through the normal regional sales/support groups.

#### Kit contents

- Reference design mouse, plus receiver
- 5 x VT5366V032 optical mouse sensor
- 3 x Lens/Aperture - see [Section 3](#)
- 5 x LED
- USB cable
- CD containing datasheet and user manuals

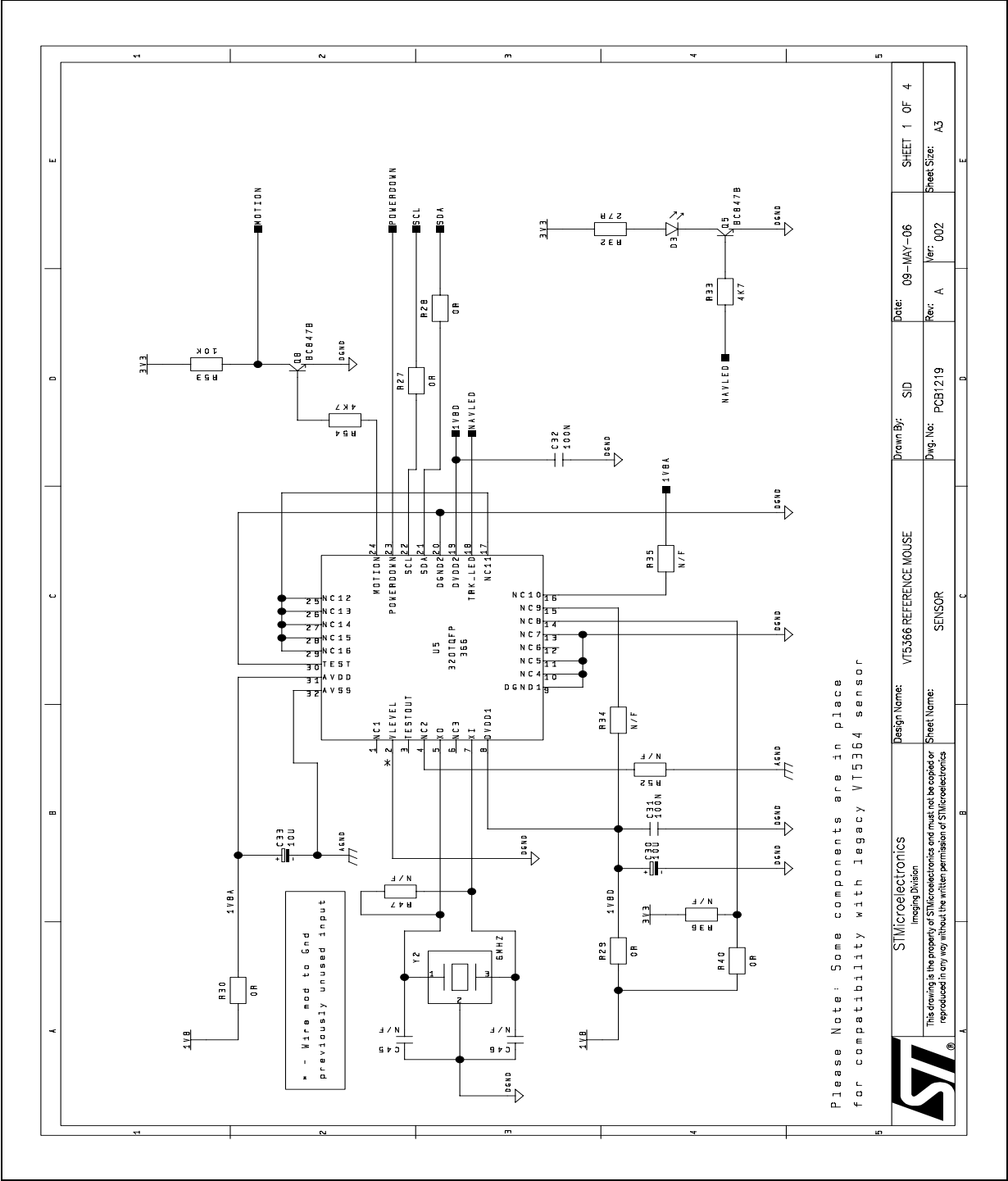
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# 1 Hardware

## 1.1 27MHz Wireless mouse schematics

Figure 1. Wireless mouse - VT5366 sensor



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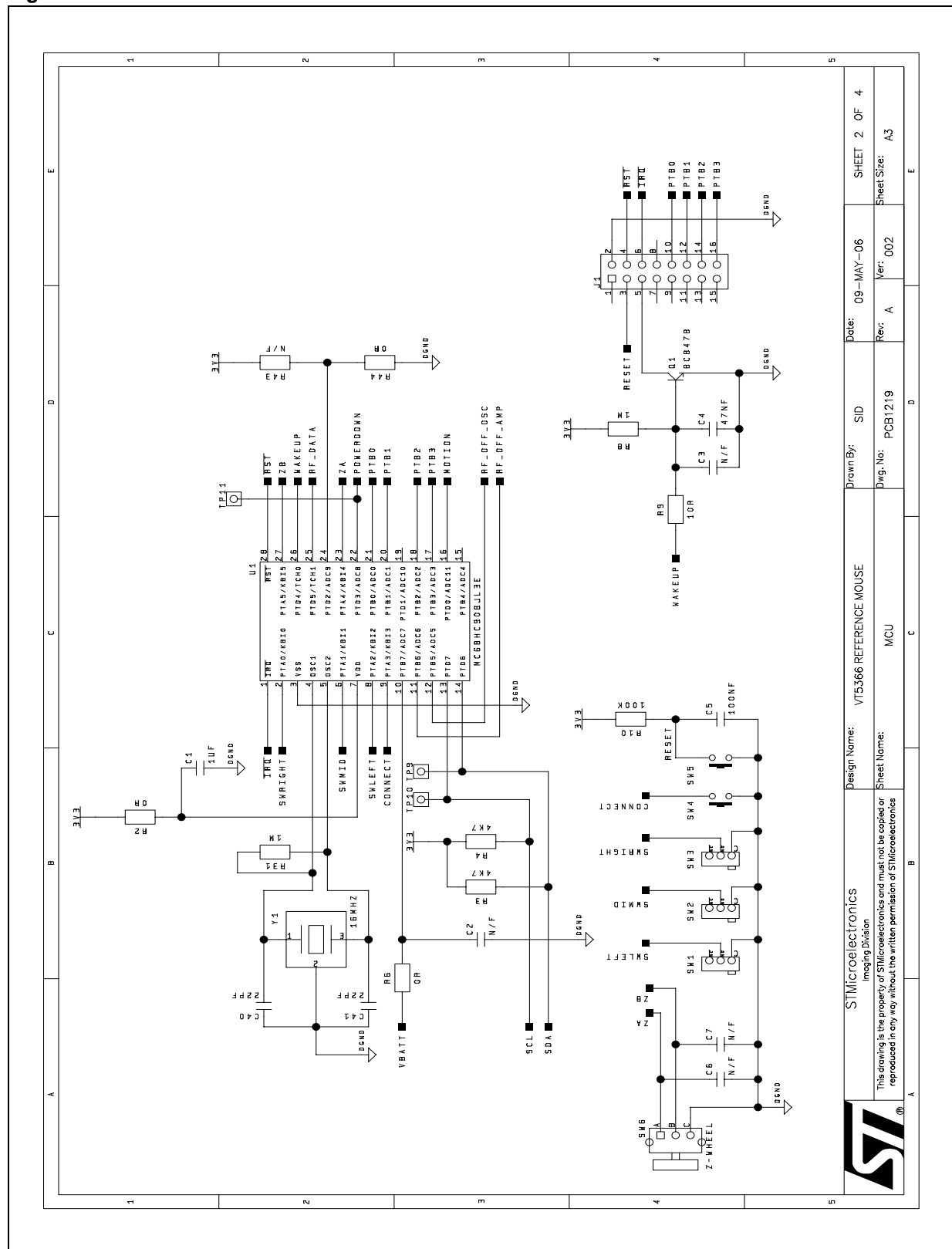
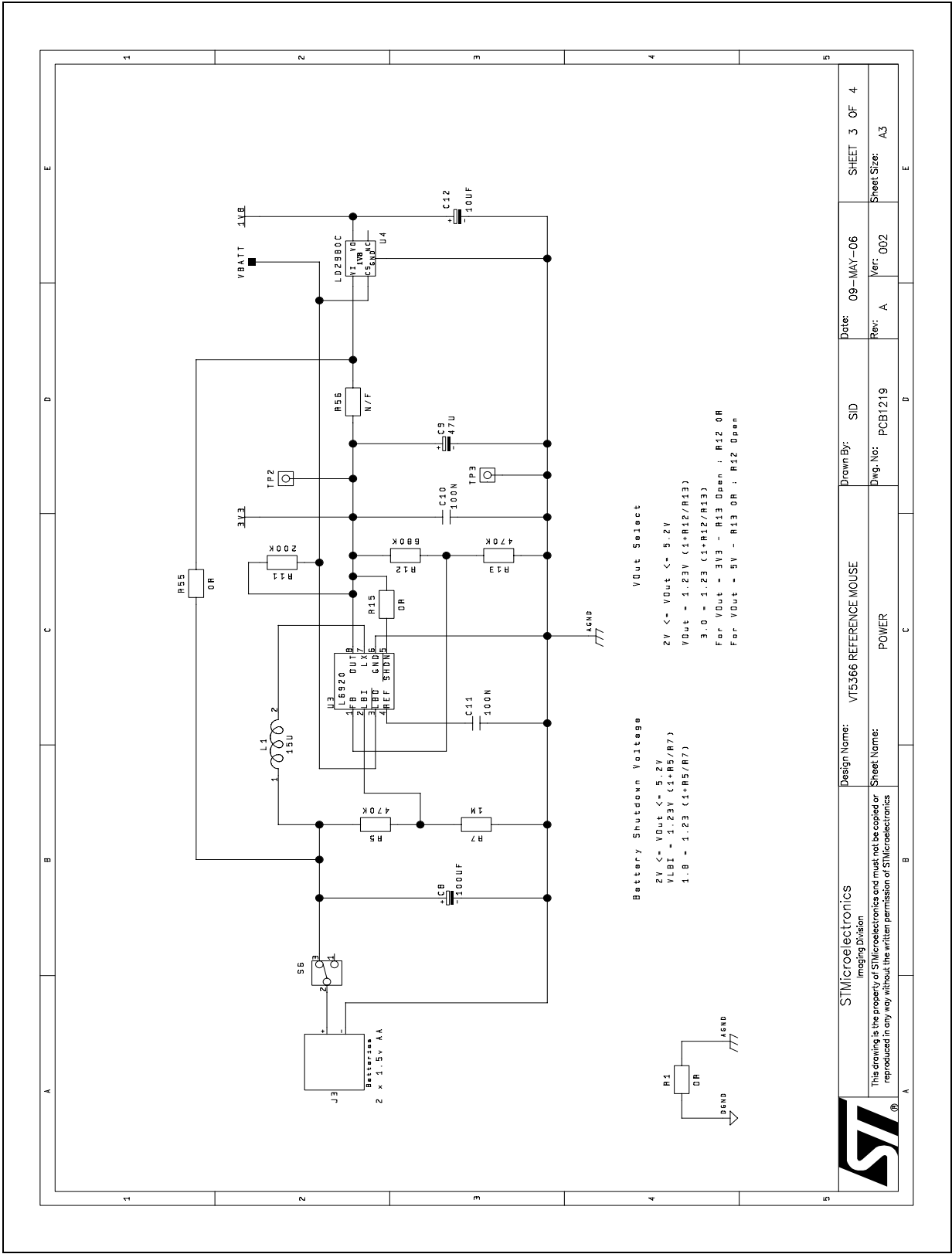
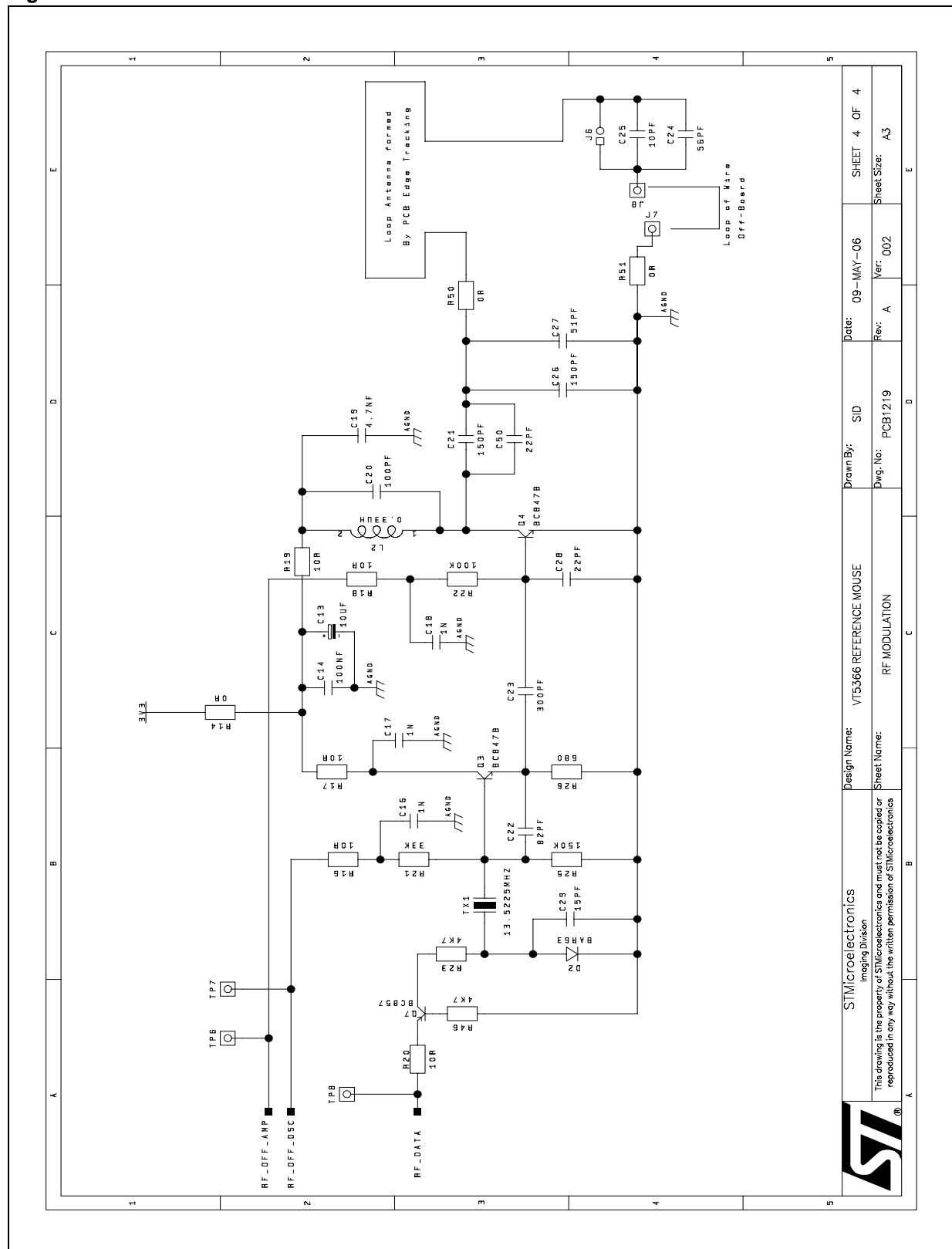


Figure 3. Wireless mouse - Power management

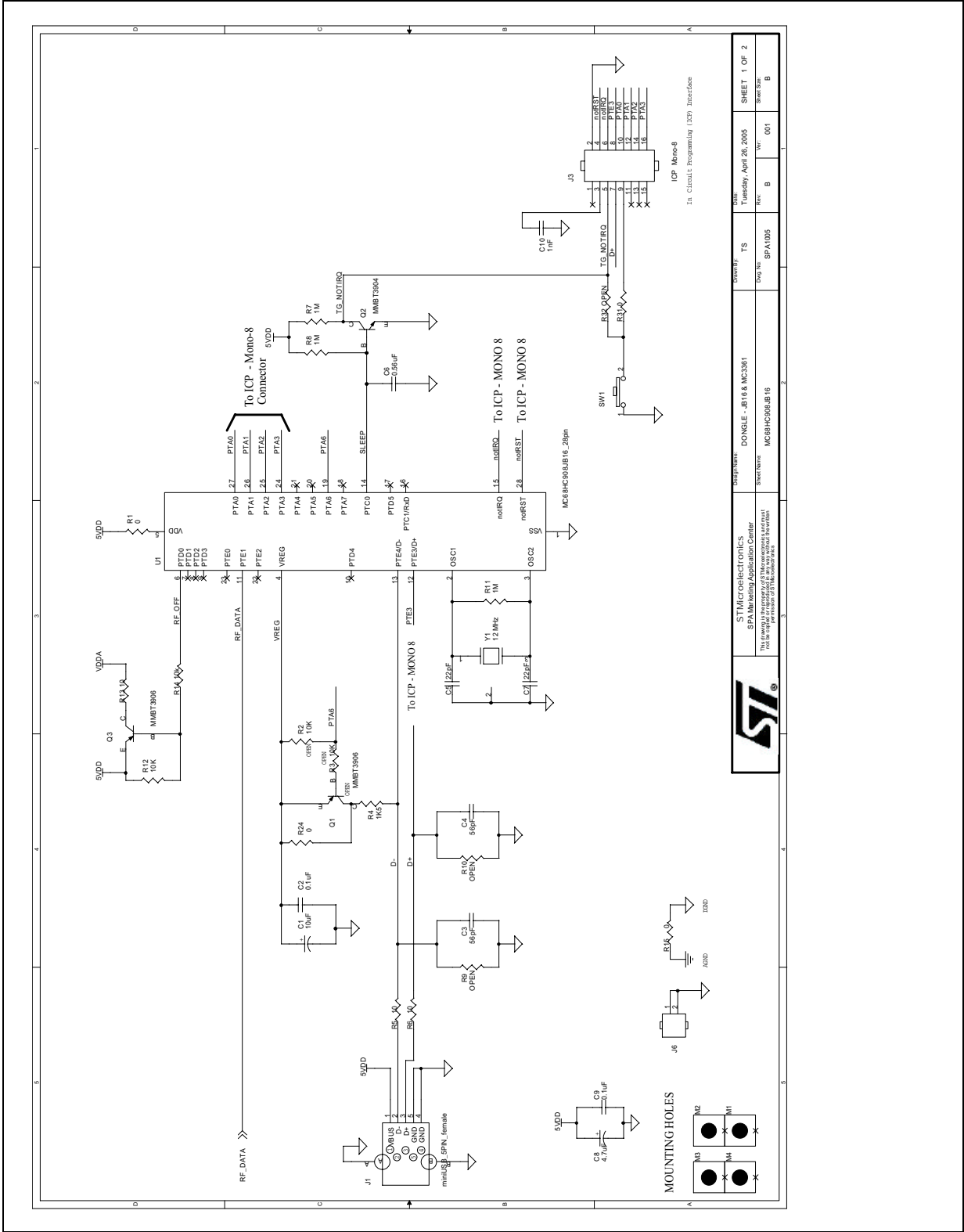


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# 1.2 Receiver schematics

Figure 5. Receiver - Microcontroller



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## 2 Bill of materials - Mouse

Table 1. Bill of materials - Mouse

Reference	Description	Manufacturer	Part number
U5	Optical mouse sensor	STMicroelectronics	VT5366V032
C1	1uF Ceramic Capacitor 0805	Standard component - many suppliers	
C25	10pF Ceramic Capacitor 0603	Standard component - many suppliers	
C29	15pF Ceramic Capacitor 0603	Standard component - many suppliers	
C28,C40,C41,C50	22pF Ceramic Capacitor 0603	Standard component - many suppliers	
C27	51pF Ceramic Capacitor 0603	DigiKey	511-1131-1-ND
C24	56pF Ceramic Capacitor 0603	Standard component - many suppliers	
C22	82pF Ceramic Capacitor 0603	Standard component - many suppliers	
C20	100pF Ceramic Capacitor 0603	Standard component - many suppliers	
C21,C26	150pF Ceramic Capacitor 0603	Standard component - many suppliers	
C23	300pF Ceramic Capacitor 0603	DigiKey	511-1149-1-ND
C16,C17,C18	1nF Ceramic Capacitor 0603	Standard component - many suppliers	
C19	4n7F Ceramic Capacitor 0603	Standard component - many suppliers	
C4	47nF Ceramic Capacitor 0603	Standard component - many suppliers	
C5,C10,C11,C14	100nF Ceramic Capacitor 0603	Standard component - many suppliers	
C31,C32	0.1uF Tantalum Capacitor Case A	Standard component - many suppliers	
C12,C13,C30,C33	10uF Tantalum Capacitor Case B	Standard component - many suppliers	
C9	47uF Tantalum Capacitor Case D	Standard component - many suppliers	
C8	100uF Tantalum Capacitor Case D	Standard component - many suppliers	
Q1,Q3,Q4,Q5,Q8	NPN Small Signal Transistor, SOT23	STMicroelectronics	BC847B
Q7	PNP Small Signal Transistor SOT23	STMicroelectronics	MMBT3906
D3	5mm high brightness Red LED	Avago	HLMP-ED27-TW000
D2	BAR63J Pin Diode, SOD-323	Standard component - many suppliers	
U3	1V Synchronous Step Up Convertor	STMicroelectronics	L6920
U1	Microcontroller, 28 pin Wide SOIC	FreeScale	MC68HC908JL3ECDW
U4	1v8 Regulator, SOT23-5L	STMicroelectronics	LD2980CM18TR
Y2	6MHz 3 pin resonator, internal caps	Farnell	116-1706
Y1	16Mhz 3 pin resonator, internal caps	Rapid Electronics	90-0680
L1	15μH Surface Mount Inductor DO1608 Series	Standard component - many suppliers	
L2	0.33μH Axial Inductor C30 - 0.25W	Farnell	117-3896
TX1	13.5225MHz Low Profile HS49 Crystal	Standard component - many suppliers	

Table 1. Bill of materials - Mouse (continued)

Reference	Description	Manufacturer	Part number
R1,R2,R6,R14, R15,R27,R28,R29, R30,R40,R44,R50, R51,R55	0R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R9,R16,R17,R18, R19,R20	10R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R32	27R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R26	680R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R3,R4,R23,R33, R46,R54	4K7 Resistor 0603 1/16W 5%	Standard component - many suppliers	
R53	10K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R21	33K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R10,R22	100K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R25	150K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R11	200K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R5,R13	470K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R12	680K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R7,R8,R31	1M Resistor 0603 1/16W 5%	Standard component - many suppliers	
S6	Subminiature PCB mounted Slide Switch, SPDT vertical 2.54mm pitch	Farnell	674-345
SW4,SW5	Sealed Key Switch (SMD) B3S1000	Farnell	177-807
SW1,SW2,SW3	Miniature Micro switch	Standard component - many suppliers	
SW6	Mechanical encoder (scroll-wheel)	Alps	EC10E Series
J1	2 x 8 Double Row PCB 0.1 " header plug	Rapid Electronics	22-0595
C2,C3,C6,C7,R34, R35,R36,R43,C45, C46,R47,R52,R56, J6	NOT FITTED		

## 2.1 Bill of materials - Receiver

**Table 2. Bill of materials - Receiver**

Reference	Description	Manufacturer	Part number
C28	30pF Ceramic Capacitor 0603	DigiKey	511-1125-1-ND
C12	36pF Ceramic Capacitor 0603	DigiKey	511-1127-1-ND
C3,C4	56pF Ceramic Capacitor 0603	Standard component - many suppliers	
C13,C14	82pF Ceramic Capacitor 0603	Standard component - many suppliers	
C23	100pF Ceramic Capacitor 0603	Standard component - many suppliers	
C11,C15	470pF Ceramic Capacitor 0603	Standard component - many suppliers	
C10	1nF Ceramic Capacitor 0603	Standard component - many suppliers	
C20	2n7F Ceramic Capacitor 0603	DigiKey	511-1167-1-ND
C22	10nF Ceramic Capacitor 0603	Standard component - many suppliers	
C19	22nF Ceramic Capacitor 0805	Standard component - many suppliers	
C9	100nF Ceramic Capacitor 0805	Standard component - many suppliers	
C2,C17,C18, C27	100nF Ceramic Capacitor 0603	Standard component - many suppliers	
C6	0.56uF Ceramic Capacitor 0603	DigiKey	PCC1912CT-ND
C8	4.7uF Miniature electrolytic cap	Standard component - many suppliers	
C1,C26	10uF 16V Miniature electrolytic cap	Standard component - many suppliers	
Q2	MMBT3904 NPN Small Signal Transistor SOT23	STMicroelectronics	MMBT3904
Q1,Q3	MMBT3906 PNP Small Signal Transistor SOT23	STMicroelectronics	MMBT3906
U1	68HC908JB16 Microcontroller, 28 pin Wide SOIC	FreeScale	MC68HC908JB16DWE
U2	MC3361BD Low power narrowband FM IF	Toko	TK83361M-G
U3	CFWS455B Filter	Toko	BLFYS455B
Y1	12Mhz 3 pin resonator, internal caps	Rapid Electronics	90-0645
Y2	26.590Mhz Low Profile HS49 Crystal	Standard component - many suppliers	
L1	7MC-8128Z Inductor	Toko	7MC-8128Z
L2	10uH Axial Inductor C30 - 0.25W	Farnell	106-222
R1,R15,R16,R19, R24,R25,R26,R31	0R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R5,R6,R13	10R Resistor 0603 1/16W 5%	Standard component - many suppliers	
R4	1K5 Resistor 0603 1/16W 5%	Standard component - many suppliers	
R21	2K2 Resistor 0603 1/16W 5%	Standard component - many suppliers	
R27	5K1 Resistor 0603 1/16W 5%	Standard component - many suppliers	

Table 2. Bill of materials - Receiver (continued)

Reference	Description	Manufacturer	Part number
R2,R3,R12,R14	10K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R18	39K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R9,R10	100K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R20	680K Resistor 0603 1/16W 5%	Standard component - many suppliers	
R7,R8,R11	1M Resistor 0603 1/16W 5%	Standard component - many suppliers	
J6	2 way single row PCB 0.1 header plug	Farnell	102-2263
J3	2x8 double row PCB 0.1" header plug	Farnell	973-3680
J1	Mini USB connector type B PCB (T/H)	Farnell	978-6465
SW1	B3S1000 Sealed Key switch (SMD)	Farnell	177-807
C5,C7,C16,C21, C24,C25,R17,R22, R23,R28,R29,R30, R32,L3,J4,J5	Not Fitted		

## 3 Optics

### 3.1 Manufacturers

STMicroelectronics has worked with optical component suppliers to produce a single piece light guide with integrated lens. The kit contains 3 pieces. For more information please contact the individual supplier.

MaxEmil Photonics Corporation  
7F, 135, Lane 235,  
Bao Chiao Road,  
Hsintien City,  
Taipei, Taiwan  
Tel: 886-2-89191179  
Fax: 886-2-89191178  
<http://www.maxemil.com.tw>

*Note: STMicroelectronics supply MaxEmil optics with their reference design mice.*

### 3.2 Drawings

*Note: Optics footprint in the base is available in IGES format*

Figure 7. Exploded view

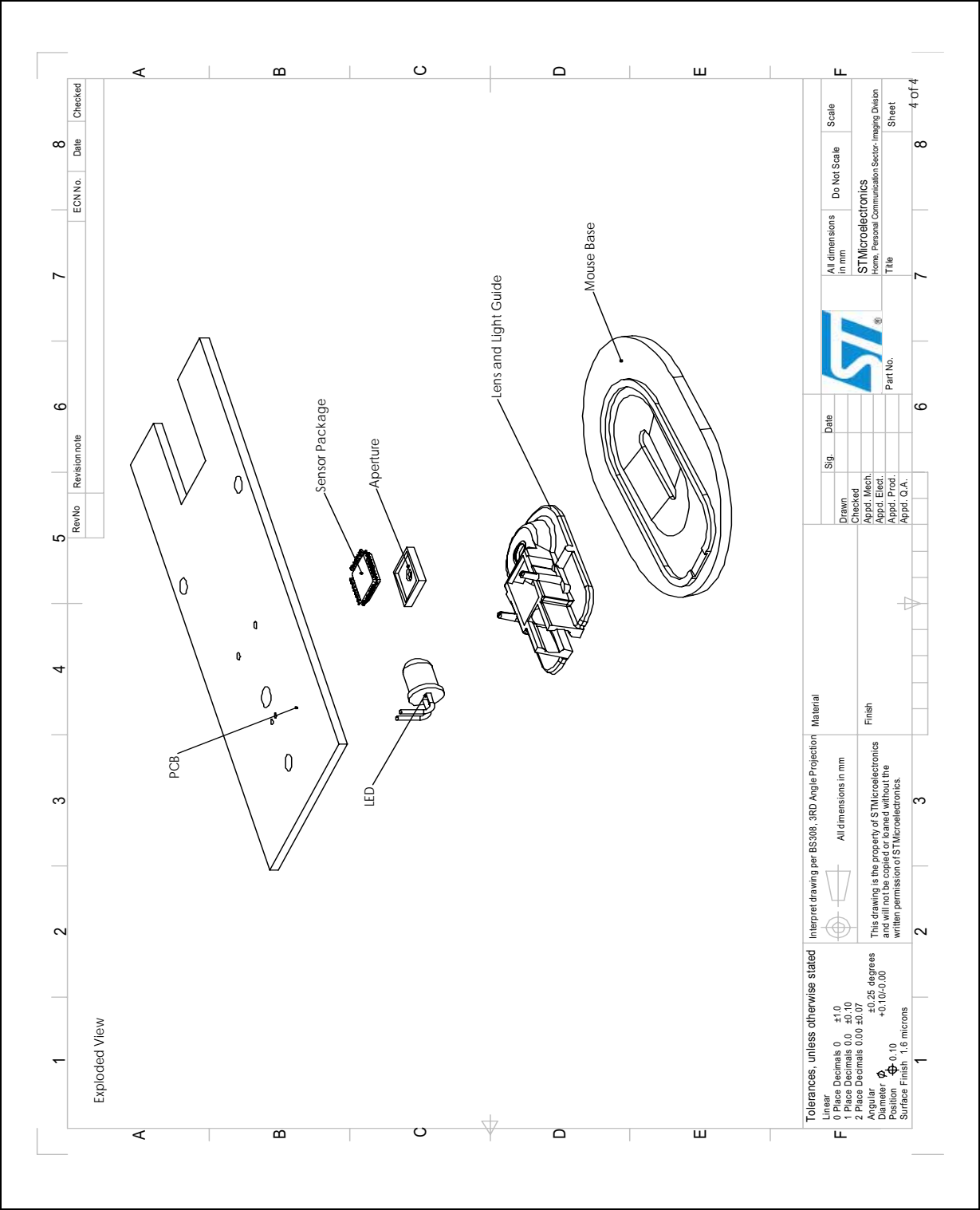
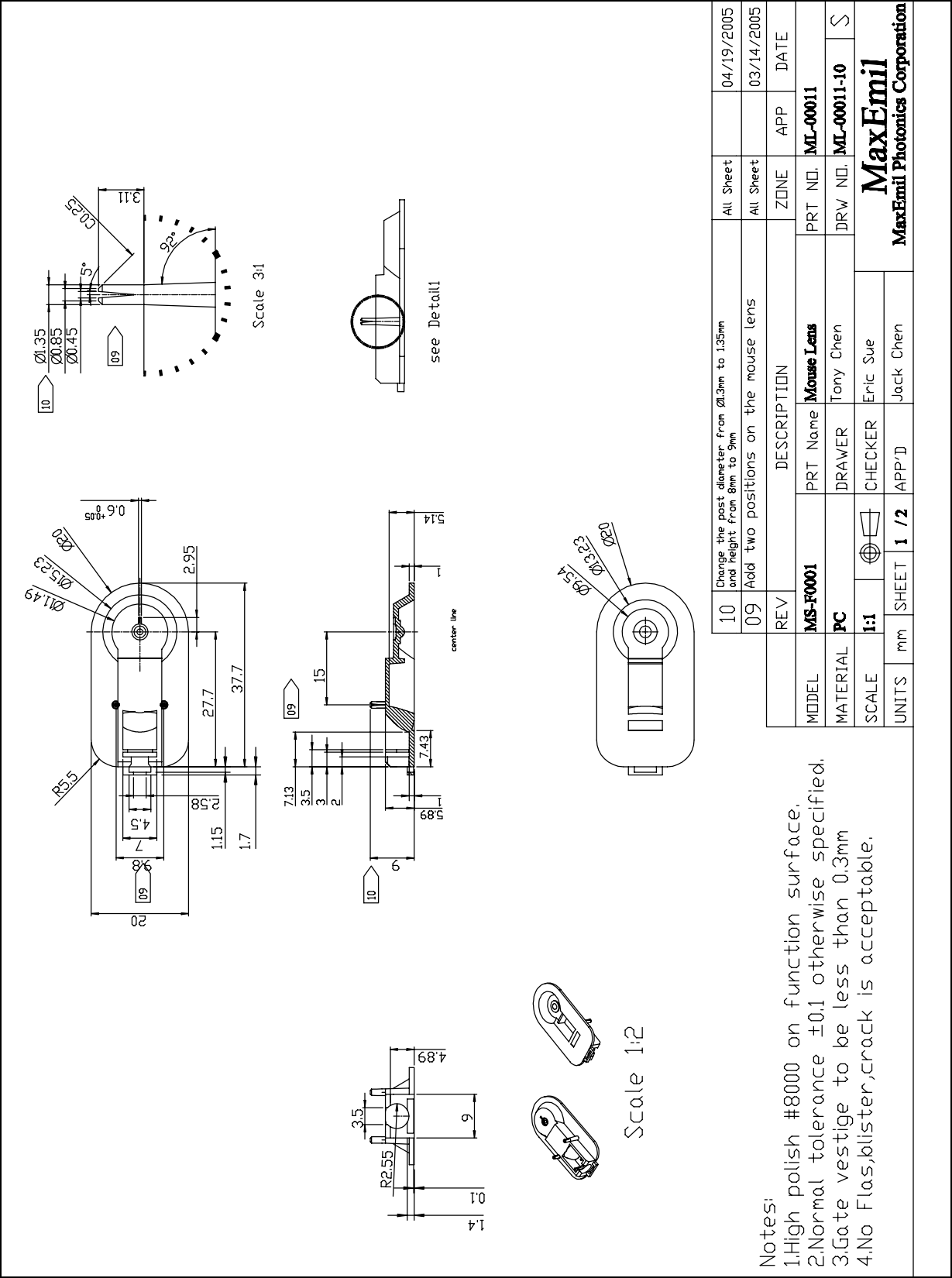


Figure 8. MaxEmil optics



**Figure 9. MaxEmail aperture**

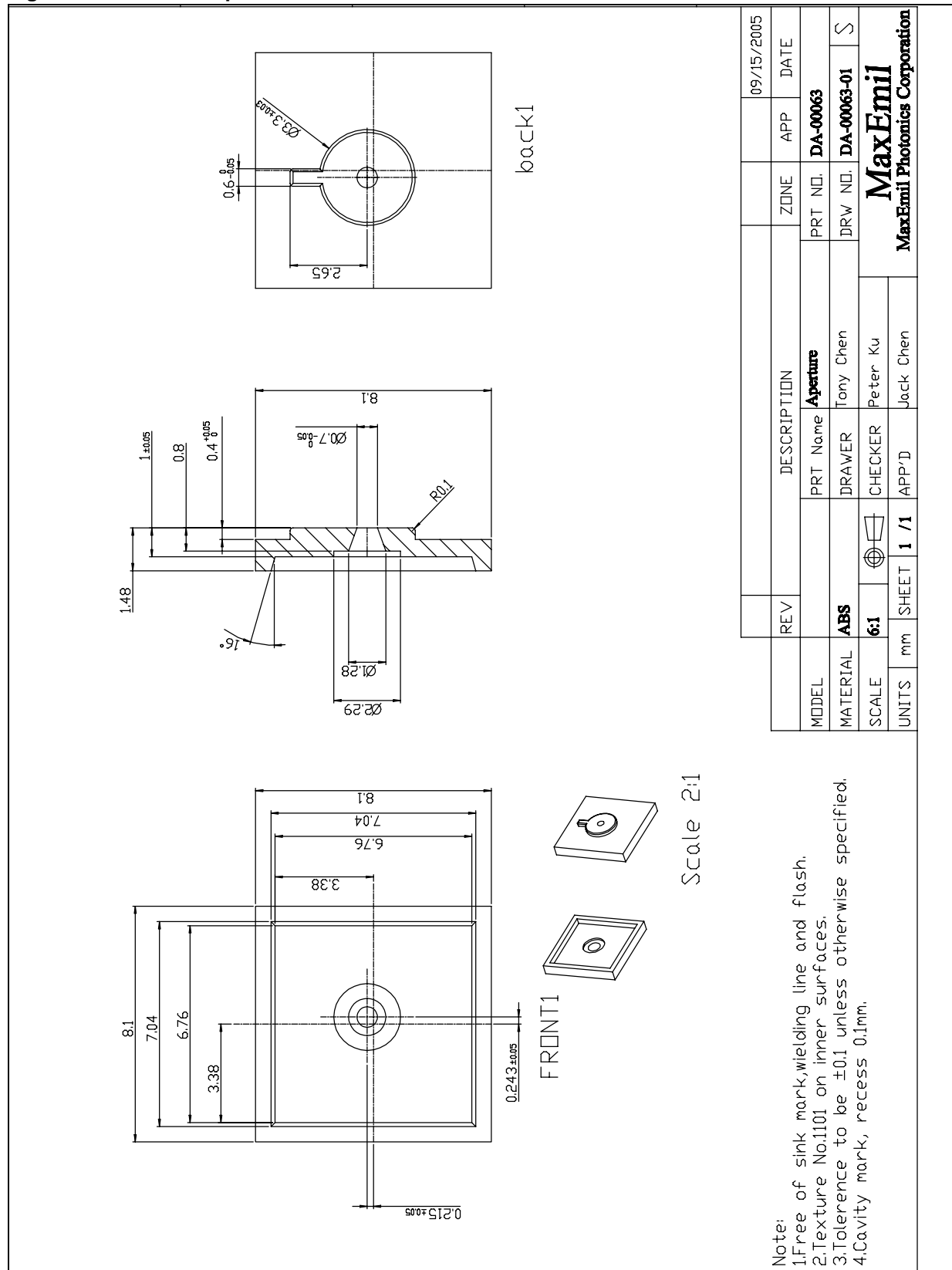




Figure 10. Cross section

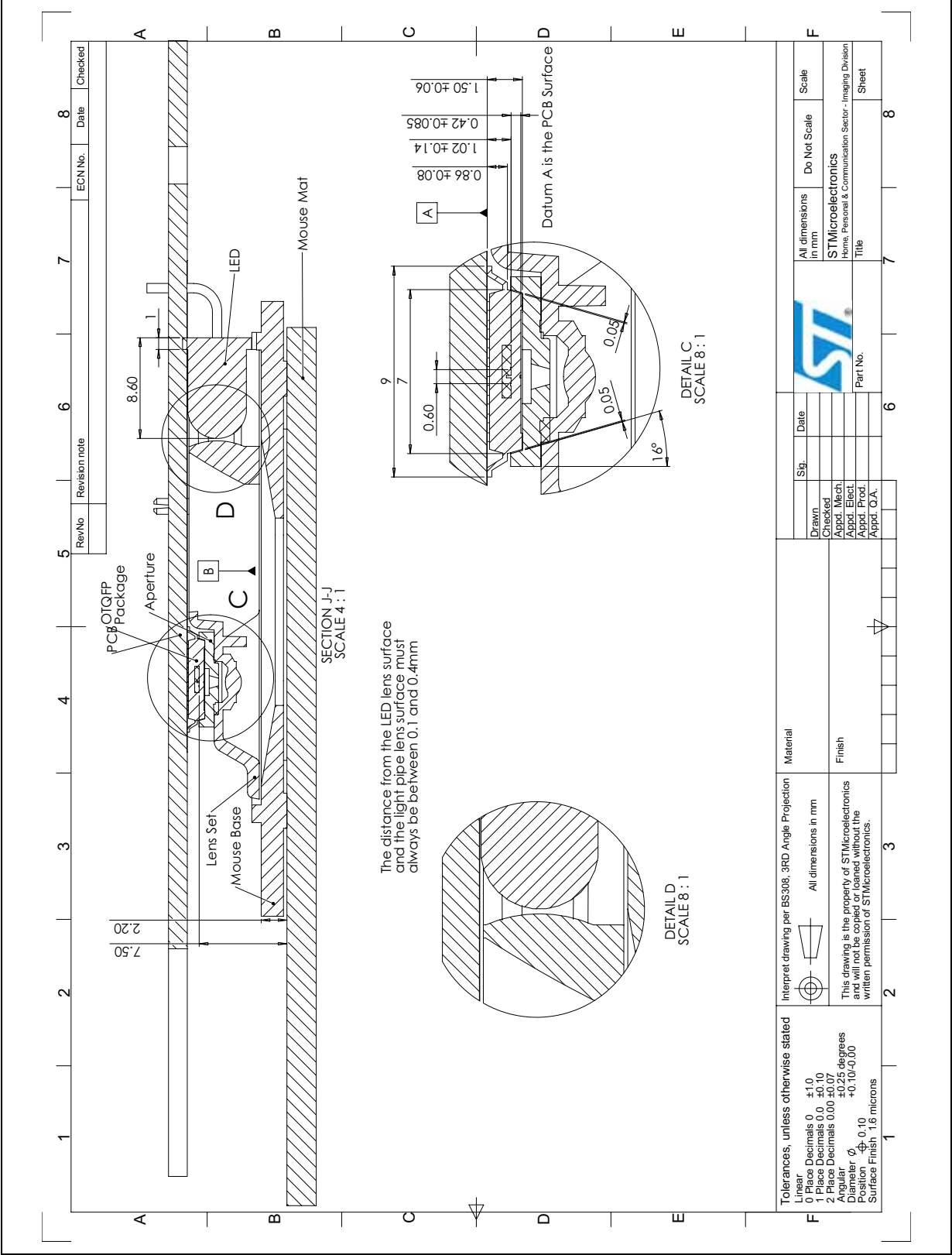
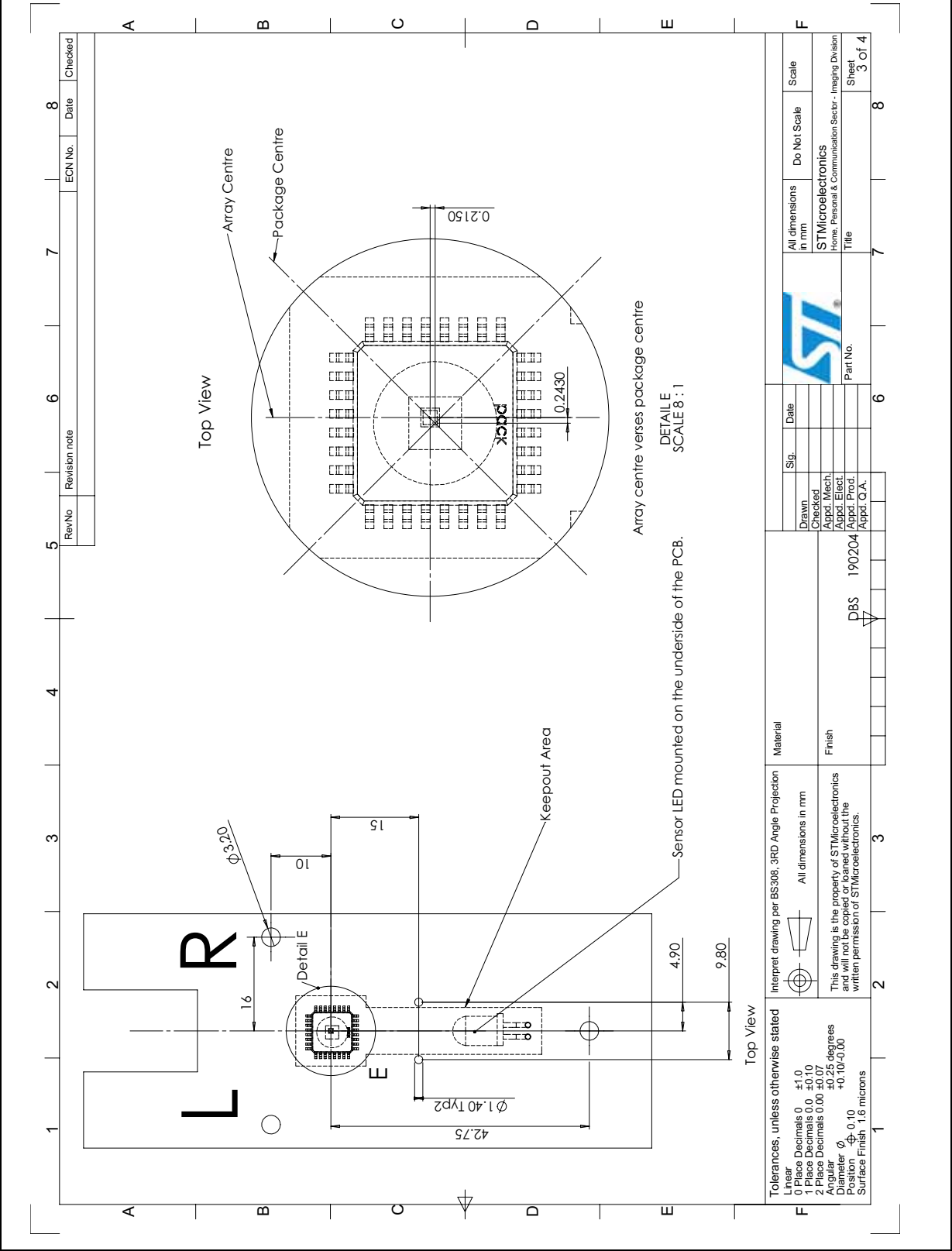


Figure 11. Sensor package



## 4 General

### 4.1 How to use the VT5366

1. Turn the mouse on using the black sliding switch located on the bottom of the mouse.
2. Connect the receiver to the PC via USB cable provided.
3. Press the connect button on the receiver (SW1) and the connect button on the mouse (at the same time). The mouse will now be connected.
4. The reset button on the mouse cycles the power of the mouse i.e., has the same affect as turning the mouse off/on.

**Figure 12. Connect/reset and power**



### 4.2 RX/TX firmware

The VT5366 mouse/receiver firmware is available on request, please contact your normal regional sales/support group.

## 5 Revision history

**Table 3. Document revision history**

Date	Revision	Changes
06-Dec-2006	0.1	Initial release.

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